



EBERLINE SERVICES

0065948

October 27, 2004

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R4-08-191-7073, SDG H2679

Dear Mr. Trent:

Enclosed is the data report for one soil sample designated under SAF No F03-025 received at Eberline Services on August 23, 2004. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

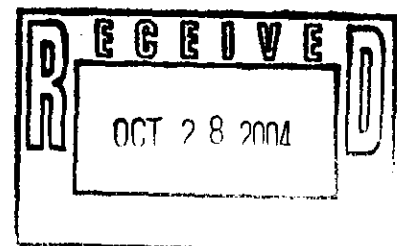
Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/

Enclosure: Data Package

RECEIVED
AUG 22 2005
EDMC



0000001

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2679 was composed of one soil sample designated under SAF No. F03-025 with a Project Designation of: 200-LW-1/LW-2 Characterization - Soil.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklists.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

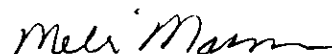
Due to an LCS failure (69%) sample B191J1 was reanalyzed for isotopic thorium with new QC samples. The results of the reanalyses are reported within. No problems were encountered during the course of the reanalyses.


2.7 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


Melissa C. Mannion
Senior Program Manager


Date

0000002

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2679

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S				
About this section	.	.	.	1
Sample Summaries	.	.	.	3
Prep Batch Summary	.	.	.	5
Work Summary	.	.	.	6
Method Blanks	.	.	.	8
Lab Control Samples	.	.	.	10
Duplicates	.	.	.	12
Data Sheets	.	.	.	14
Method Summaries	.	.	.	15
Report Guides	.	.	.	22
End of Section	.	.	.	36

Melissa Mann
Prepared by

Melissa Mann
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 10/27/04

0000003

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2679

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000004

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2679

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 2

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000005

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2679

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R408191-01	B191J1	216-S-20; 12.5ft-15ft	SOLID		F03-025	F03-025-113	08/10/04 12:45
R408191-02	Lab Control Sample		SOLID		F03-025		
R408191-03	Method Blank		SOLID		F03-025		
R408191-04	Duplicate (R408191-01)	216-S-20; 12.5ft-15ft	SOLID		F03-025		08/10/04 12:45
R408191-05	Lab Control Sample		SOLID		F03-025		
R408191-06	Method Blank		SOLID		F03-025		
R408191-07	Duplicate (R408191-01)	216-S-20; 12.5ft-15ft	SOLID		F03-025		08/10/04 12:45

LAB SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 10/27/04

0000006

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

QC SUMMARY

SDG 7073

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2679

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7073	F03-025-113	B191J1	SOLID	92.5	308.9 g		08/23/04 13		R408191-01	7073-001
		Method Blank	SOLID						R408191-03	7073-003
		Method Blank	SOLID						R408191-06	7073-006
		Lab Control Sample	SOLID						R408191-02	7073-002
		Lab Control Sample	SOLID						R408191-05	7073-005
		Duplicate (R408191-01)	SOLID	92.5	308.9 g		08/23/04 13		R408191-04	7073-004
		Duplicate (R408191-01)	SOLID	92.5	308.9 g		08/23/04 13		R408191-07	7073-007

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-QS

Version 3.06

Report date 10/27/04

0000007

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2679

TEST	MATRIX	METHOD	PREPARATION	ERROR			PLANCHETS ANALYZED				QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	FIERS
Alpha Spectroscopy												
TH	SOLID	Thorium, Isotopic in Solids	7095-137	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	7095-137	10.0	1			1	1	1/1		
TC	SOLID	Technetium 99 in Solids	7095-137	10.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7095-137	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Solids	7095-137	10.0	1			1	1	1/1		
H	SOLID	Tritium in Solids	7095-137	10.0	1			1	1	1/1		
NI_L	SOLID	Nickel 63 in Solids	7095-137	10.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 10/27/04

0000008

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2679

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
R408191-01	B191J1			7073-001	C		09/17/04	09/29/04	MWT	Carbon 14 in Solids
08/10/04	216-S-20; 12.5ft-15ft		SOLID	7073-001	GAM		09/22/04	09/29/04	MWT	Gamma Scan
08/23/04	F03-025-113	F03-025		7073-001	H		09/18/04	09/29/04	MWT	Tritium in Solids
				7073-001	NI_L		09/19/04	09/29/04	MWT	Nickel 63 in Solids
				7073-001	SR		09/14/04	09/29/04	MWT	Total Strontium in Solids
				7073-001	TC		09/22/04	09/29/04	MWT	Technetium 99 in Solids
				7073-001	TH	A1	10/20/04	10/26/04	MWT	Thorium, Isotopic in Solids
R408191-02	Lab Control Sample			7073-002	C		09/18/04	09/29/04	MWT	Carbon 14 in Solids
			SOLID	7073-002	GAM		09/23/04	09/29/04	MWT	Gamma Scan
		F03-025		7073-002	H		09/19/04	09/29/04	MWT	Tritium in Solids
				7073-002	NI_L		09/19/04	09/29/04	MWT	Nickel 63 in Solids
				7073-002	SR		09/14/04	09/29/04	MWT	Total Strontium in Solids
				7073-002	TC		09/21/04	09/29/04	MWT	Technetium 99 in Solids
R408191-03	Method Blank			7073-003	C		09/17/04	09/29/04	MWT	Carbon 14 in Solids
			SOLID	7073-003	GAM		09/23/04	09/29/04	MWT	Gamma Scan
		F03-025		7073-003	H		09/18/04	09/29/04	MWT	Tritium in Solids
				7073-003	NI_L		09/19/04	09/29/04	MWT	Nickel 63 in Solids
				7073-003	SR		09/14/04	09/29/04	MWT	Total Strontium in Solids
				7073-003	TC		09/21/04	09/29/04	MWT	Technetium 99 in Solids
R408191-04	Duplicate (R408191-01)			7073-004	C		09/17/04	09/29/04	MWT	Carbon 14 in Solids
08/10/04	216-S-20; 12.5ft-15ft		SOLID	7073-004	GAM		09/23/04	09/29/04	MWT	Gamma Scan
08/23/04		F03-025		7073-004	H		09/18/04	09/29/04	MWT	Tritium in Solids
				7073-004	NI_L		09/19/04	09/29/04	MWT	Nickel 63 in Solids
				7073-004	SR		09/14/04	09/29/04	MWT	Total Strontium in Solids
				7073-004	TC		09/21/04	09/29/04	MWT	Technetium 99 in Solids
R408191-05	Lab Control Sample			7073-005	TH		10/20/04	10/26/04	MWT	Thorium, Isotopic in Solids
			SOLID							
		F03-025								
R408191-06	Method Blank			7073-006	TH		10/20/04	10/26/04	MWT	Thorium, Isotopic in Solids
			SOLID							
		F03-025								

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/27/04

0000009

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2679

LAB SAMPLE	CLIENT SAMPLE ID									
COLLECTED	LOCATION	MATRIX			SUF-					
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
R408191-07	Duplicate (R408191-01)		7073-007	TH		10/20/04	10/26/04	MWT	Thorium, Isotopic in Solids	
08/10/04	216-S-20; 12.5ft-15ft	SOLID								
08/23/04		F03-025								

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
C	F03-025	Carbon 14 in Solids	C14_COX_LSC	1			1	1	1	4
GAM	F03-025	Gamma Scan	GAMMA_GS	1			1	1	1	4
H	F03-025	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
NI_L	F03-025	Nickel 63 in Solids	NI63_LSC	1			1	1	1	4
SR	F03-025	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TC	F03-025	Technetium 99 in Solids	TC99_TR_SEP_LSC	1			1	1	1	4
TH	F03-025	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	1			1	1	1	4
TOTALS				7			7	7	7	28

WORK SUMMARY

Page 2

SUMMARY DATA SECTION

Page 7

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/27/04

0000010

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

7073-003

Method Blank

METHOD BLANK

SDG 7073
Contact Melissa C. MannionClient/Case no Hanford SDG H2679
Contract No. 630Lab sample id R408191-03
Dept sample id 7073-003Client sample id Method Blank
Material/Matrix SOLID
SAF No F03-025

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.348	1.7	2.8	400	U	H
Carbon 14	14762-75-5	1.25	1.5	2.4	50	U	C
Nickel 63	13981-37-8	-0.733	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	-0.044	0.16	0.29	1.0	U	SR
Technetium 99	14133-76-7	-0.092	0.16	0.55	15	U	TC
Potassium 40	13966-00-2	U		0.18		U	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.013	0.10	U	GAM
Radium 226	13982-63-3	U		0.028	0.10	U	GAM
Radium 228	15262-20-1	U		0.061	0.20	U	GAM
Europium 152	14683-23-9	U		0.036	0.10	U	GAM
Europium 154	15585-10-1	U		0.047	0.10	U	GAM
Europium 155	14391-16-3	U		0.026	0.10	U	GAM
Thorium 228	14274-82-9	U		0.023		U	GAM
Thorium 232	TH-232	U		0.061		U	GAM
Uranium 235	15117-96-1	U		0.045		U	GAM
Uranium 238	U-238	U		1.9		U	GAM
Americium 241	14596-10-2	U		0.029		U	GAM

200-LW-1/LW-2 Characterization-Soil

QC-BLANK 48870

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

Page 8

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 10/27/04

0000011

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

7073-006

Method Blank

METHOD BLANK

SDG <u>7073</u>	Client/Case no <u>Hanford</u>	SDG <u>H2679</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R408191-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7073-006</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-025</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 228	14274-82-9	0	0.11	0.41	1.0	U	TH
Thorium 230	14269-63-7	0	0.22	0.41	1.0	U	TH
Thorium 232	TH-232	0	0.11	0.41	1.0	U	TH

200-LW-1/LW-2 Characterization-Soil

QC-BLANK #49316

METHOD BLANKS

Page 2

SUMMARY DATA SECTION

Page 9

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/27/04</u>

0000012

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

7073-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7073</u>	Client/Case no <u>Hanford</u>	SDG <u>H2679</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R408191-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7073-002</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-025</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	841	11	3.2	400		H	814	33	103	83-117	80-120
Carbon 14	1720	17	3.8	50		C	1720	69	100	84-116	80-120
Nickel 63	223	4.5	2.3	30		NI_L	226	9.0	99	84-116	80-120
Total Strontium	10.7	0.57	0.29	1.0		SR	10.2	0.41	105	81-119	80-120
Technetium 99	107	2.2	0.54	15		TC	109	4.4	98	84-116	80-120
Cobalt 60	2.12	0.12	<u>0.068</u>	0.050		GAM	2.21	0.088	96	76-124	80-120
Cesium 137	2.11	0.10	0.075	0.10		GAM	2.07	0.083	102	75-125	80-120

200-LW-1/LW-2 Characterization-Soil

QC-LCS 48869

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>10/27/04</u>

0000013

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

7073-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7073</u>	Client/Case no <u>Hanford</u>	SDG <u>H2679</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R408191-05</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7073-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-025</u>	

ANALYTE	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2 σ ERR pCi/g	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS
Thorium 230	37.6	4.6	0.38	1.0		TH	42.0	1.7	90	81-119	80-120

200-LW-1/LW-2 Characterization-Soil

QC-LCS #49315

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>10/27/04</u>

0000014

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

7073-004

B191J1

DUPLICATE

SDG <u>7073</u>		Client/Case no <u>Hanford</u>		SDG <u>H2679</u>
Contact <u>Melissa C. Mannion</u>		Contract <u>No. 630</u>		
DUPLICATE		ORIGINAL		
Lab sample id <u>R408191-04</u>	Lab sample id <u>R408191-01</u>	Client sample id <u>B191J1</u>		
Dept sample id <u>7073-004</u>	Dept sample id <u>7073-001</u>	Location/Matrix <u>216-S-20; 12.5ft-15ft</u> SOLID		
	Received <u>08/23/04</u>	Collected/Weight <u>08/10/04 12:45</u> <u>308.9 g</u>		
% solids <u>92.5</u>	% solids <u>92.5</u>	Custody/SAF No <u>F03-025-113</u> <u>F03-025</u>		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	-0.487	1.5	2.6	400	U	H	-1.21	1.7	3.0	U	-		
Carbon 14	1.19	1.3	2.2	50	U	C	-0.199	1.4	2.4	U	-		
Nickel 63	-0.425	1.4	2.5	30	U	NI_L	-0.091	1.5	2.5	U	-		
Total Strontium	-0.028	0.099	0.22	1.0	U	SR	0.009	0.16	0.27	U	-		
Technetium 99	0.061	0.18	0.56	15	U	TC	0.113	0.14	0.34	U	-		
Potassium 40	8.66	0.68	0.39			GAM	9.06	0.70	0.43		5	36	
Cobalt 60	U		0.033	0.050	U	GAM	U		0.037	U	-		
Cesium 137	U		0.035	0.10	U	GAM	U		0.033	U	-		
Radium 226	0.368	0.068	0.070	0.10		GAM	0.358	0.067	0.070		3	51	
Radium 228	0.524	0.14	0.14	0.20		GAM	0.624	0.16	0.16		17	64	
Europium 152	U		0.091	0.10	U	GAM	U		0.088	U	-		
Europium 154	U		0.11	0.10	U	GAM	U		0.11	U	-		
Europium 155	U		0.096	0.10	U	GAM	U		0.096	U	-		
Thorium 228	0.414	0.040	0.042			GAM	0.409	0.041	0.043		1	38	
Thorium 232	0.524	0.14	0.14			GAM	0.624	0.16	0.16		17	64	
Uranium 235	U		0.12		U	GAM	U		0.13	U	-		
Uranium 238	U		4.2		U	GAM	U		4.1	U	-		
Americium 241	U		0.16		U	GAM	U		0.15	U	-		

200-LW-1/LW-2 Characterization-Soil

QC-DUP#1 48871

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 12

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
 Report date 10/27/04

0000015

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

7073-007

B191J1

DUPLICATE

SDG <u>7073</u>		Client/Case no <u>Hanford</u>		SDG <u>H2679</u>
Contact <u>Melissa C. Mannion</u>		Contract <u>No. 630</u>		
DUPLICATE		ORIGINAL		
Lab sample id <u>R408191-07</u>	Lab sample id <u>R408191-01</u>	Client sample id <u>B191J1</u>		
Dept sample id <u>7073-007</u>	Dept sample id <u>7073-001</u>	Location/Matrix <u>216-S-20; 12.5ft-15ft</u> <u>SOLID</u>		
	Received <u>08/23/04</u>	Collected/Weight <u>08/10/04 12:45</u> <u>308.9 g</u>		
% solids <u>92.5</u>	% solids <u>92.5</u>	Custody/SAF No <u>F03-025-113</u> <u>F03-025</u>		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Thorium 228	0.980	0.42	0.31	1.0		TH	0.640	0.36	0.27		42	103
Thorium 230	0.367	0.33	0.31	1.0		TH	0.319	0.28	0.27		14	190
Thorium 232	1.18	0.42	0.31	1.0		TH	0.958	0.36	0.27		21	78

200-LW-1/LW-2 Characterization-Soil

QC-DUP#1A1 49316

DUPLICATES

Page 2

SUMMARY DATA SECTION

Page 13

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>10/27/04</u>

0000016

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

7073-001

B191J1

DATA SHEET

SDG <u>7073</u>	Client/Case no <u>Hanford</u>	SDG <u>H2679</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R408191-01</u>	Client sample id <u>B191J1</u>	
Dept sample id <u>7073-001</u>	Location/Matrix <u>216-S-20; 12.5ft-15ft</u>	<u>SOLID</u>
Received <u>08/23/04</u>	Collected/Weight <u>08/10/04 12:45</u>	<u>308.9 g</u>
% solids <u>92.5</u>	Custody/SAF No <u>F03-025-113</u>	<u>F03-025</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-1.21	1.7	3.0	400	U	H
Carbon 14	14762-75-5	-0.199	1.4	2.4	50	U	C
Nickel 63	13981-37-8	-0.091	1.5	2.5	30	U	NI_L
Total Strontium	SR-RAD	0.009	0.16	0.27	1.0	U	SR
Technetium 99	14133-76-7	0.113	0.14	0.34	15	U	TC
Thorium 228	14274-82-9	0.640	0.36	0.27	1.0		TH
Thorium 230	14269-63-7	0.319	0.28	0.27	1.0		TH
Thorium 232	TH-232	0.958	0.36	0.27	1.0		TH
Potassium 40	13966-00-2	9.06	0.70	0.43			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	U		0.033	0.10	U	GAM
Radium 226	13982-63-3	0.358	0.067	0.070	0.10		GAM
Radium 228	15262-20-1	0.624	0.16	0.16	0.20		GAM
Europium 152	14683-23-9	U		0.088	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.096	0.10	U	GAM
Thorium 228	14274-82-9	0.409	0.041	0.043			GAM
Thorium 232	TH-232	0.624	0.16	0.16			GAM
Uranium 235	15117-96-1	U		0.13		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Americium 241	14596-10-2	U		0.15		U	GAM

200-LW-1/LW-2 Characterization-Soil

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 14

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/27/04</u>

0000017

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

Test TH Matrix SOLID
SDG 7073
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2679

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

Preparation batch 7095-137

R408191-01	A1	7073-001	B191J1	0.319
R408191-05		7073-005	LCS (QC ID=49315)	ok
R408191-06		7073-006	BLK (QC ID=49316)	U
R408191-07		7073-007	Duplicate (R408191-01)	ok

Nominal values and limits from method RDLs (pCi/g) 1.0
200-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

LAB RAW SUF- MAX MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7095-137 2σ prep error 5.0 % Reference Lab Notebook 7095 pg. 137

R408191-01	A1	B191J1	0.27	0.250	91	154	71	10/19/04	10/20	SS-028
R408191-05		LCS (QC ID=49315)	0.38	0.250	70	154		10/19/04	10/20	SS-031
R408191-06		BLK (QC ID=49316)	0.41	0.250	62	154		10/19/04	10/20	SS-032
R408191-07		Duplicate (R408191-01) (QC ID=49317)	0.31	0.250	87	154	71	10/19/04	10/20	SS-034

Nominal values and limits from method 1.0 0.250 20-105 150 180

PROCEDURES	REFERENCE	THISO_1E_PLATE_AEA
	CP-061	Determination of Moisture Content in Solid Samples rev 3
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	0.34 ± 0.13
FOR 4 SAMPLES	YIELD	78 ± 28

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 15

Lab id EBRLINE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/27/04

0000018

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

Test SR Matrix SOLID
SDG 7073
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2679

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium

Preparation batch 7095-137

R408191-01		7073-001	B191J1	U
R408191-02		7073-002	LCS (QC ID=48869)	ok
R408191-03		7073-003	BLK (QC ID=48870)	U
R408191-04		7073-004	Duplicate (R408191-01)	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
200-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED

Preparation batch 7095-137 2σ prep error 10.0 % Reference Lab Notebook 7095 pg. 137

R408191-01		B191J1	0.27	1.00			95		200			35	09/14/04
R408191-02		LCS (QC ID=48869)	0.29	1.00			82		200				09/14/04
R408191-03		BLK (QC ID=48870)	0.29	1.00			81		200				09/14/04
R408191-04		Duplicate (R408191-01) (QC ID=48871)	0.22	1.00			96		100			35	09/14/04

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
CP-061		Determination of Moisture Content in Solid Samples rev 3
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 5
CP-381		Strontium in Solids, rev 1

AVERAGES ± 2 SD	MDA 0.27 ± 0.066
FOR 4 SAMPLES	YIELD 88 ± 16

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

Page 16

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/27/04

0000019

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

Test TC Matrix SOLID
SDG 7073
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2679

RESULTS

LAB	RAW	SUF-	Technetium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID
			99

Preparation batch 7095-137

R408191-01	7073-001	B191J1	U
R408191-02	7073-002	LCS (QC ID=48869)	ok
R408191-03	7073-003	BLK (QC ID=48870)	U
R408191-04	7073-004	Duplicate (R408191-01)	- U

Nominal values and limits from method RDLs (pCi/g) 15
200-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED
													YZED
													DETECTOR

Preparation batch 7095-137 2σ prep error 10.0 % Reference Lab Notebook 7095 pg. 137

R408191-01	B191J1	0.34	1.00	106	100	43	09/16/04	09/22	GRB-204
R408191-02	LCS (QC ID=48869)	0.54	1.00	92	50		09/16/04	09/21	GRB-222
R408191-03	BLK (QC ID=48870)	0.55	1.00	94	50		09/16/04	09/21	GRB-223
R408191-04	Duplicate (R408191-01) (QC ID=48871)	0.56	1.00	90	50	42	09/16/04	09/21	GRB-224

Nominal values and limits from method 15 1.00 20-105 50 180

PROCEDURES REFERENCE TC99_TR_SEP_LSC
CP-431 Technetium-99 Purification of Soil or Resin by
Extraction Chromatography, rev 2
CP-008 Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD MDA 0.50 ± 0.21
FOR 4 SAMPLES YIELD 96 ± 14

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

Page 17

Lab id EBRLE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/27/04

0000020

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

Test GAM Matrix SOLID
 SDG 7073
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN
 GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2679

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

Preparation batch 7095-137

R408191-01	7073-001	B191J1	U	U
R408191-02	7073-002	LCS (QC ID=48869)	ok	ok
R408191-03	7073-003	BLK (QC ID=48870)	U	U
R408191-04	7073-004	Duplicate (R408191-01)	- U	- U

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
 200-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7095-137 2σ prep error 15.0 % Reference Lab Notebook 7095 pg. 137

R408191-01	B191J1	0.31	217	427	43	09/15/04	09/22	JR,05,00
R408191-02	LCS (QC ID=48869)	0.068	217	435		09/18/04	09/23	JR,03,00
R408191-03	BLK (QC ID=48870)	0.11	217	435		09/15/04	09/23	JR,04,00
R408191-04	Duplicate (R408191-01) (QC ID=48871)	0.33	217	435	44	09/15/04	09/23	JR,05,00

Nominal values and limits from method 0.050 217 100 180

PROCEDURES REFERENCE GAMMA_GS
 CP-061 Determination of Moisture Content in Solid Samples
 rev 3
 CP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 0.20 ± 0.27
 FOR 4 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 18

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 10/27/04

0000021

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

Test C Matrix SOLIDSDG 7073Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client HanfordContract No. 630Contract SDG H2679

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Carbon 14

Preparation batch 7095-137

R408191-01	7073-001	B191J1	U
R408191-02	7073-002	LCS (QC ID=48869)	ok
R408191-03	7073-003	BLK (QC ID=48870)	U
R408191-04	7073-004	Duplicate (R408191-01)	- U

Nominal values and limits from method RDLs (pCi/g) 50
 200-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7095-137 2σ prep error 10.0 % Reference Lab Notebook 7095 pg. 137

R408191-01	B191J1	2.4	0.371	100	100	38	09/17/04	09/17	LSC-007
R408191-02	LCS (QC ID=48869)	3.8	0.371	100	41		09/17/04	09/18	LSC-007
R408191-03	BLK (QC ID=48870)	2.4	0.371	100	100		09/17/04	09/17	LSC-007
R408191-04	Duplicate (R408191-01) (QC ID=48871)	2.2	0.408	100	100	38	09/17/04	09/17	LSC-007

Nominal values and limits from method 50 0.371 25 180

PROCEDURES REFERENCE C14_COX_LSC
 CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 2.7 ± 1.5
 FOR 4 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

Page 5

SUMMARY DATA SECTION

Page 19

Lab id EBRLNEProtocol HanfordVersion Ver 1.0Form DVD-LMSVersion 3.06Report date 10/27/04

0000022

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

Test H Matrix SOLID
SDG 7073
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2679

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Tritium

Preparation batch 7095-137

R408191-01	7073-001	B191J1	U
R408191-02	7073-002	LCS (QC ID=48869)	ok
R408191-03	7073-003	BLK (QC ID=48870)	U
R408191-04	7073-004	Duplicate (R408191-01)	- U

Nominal values and limits from method RDLs (pCi/g) 400
200-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7095-137 2 σ prep error 10.0 % Reference Lab Notebook 7095 pg. 137

R408191-01	B191J1	3.0	0.371	100	120	39	09/17/04	09/18	LSC-007
R408191-02	LCS (QC ID=48869)	3.2	0.371	100	120		09/17/04	09/19	LSC-007
R408191-03	BLK (QC ID=48870)	2.8	0.371	100	120		09/17/04	09/18	LSC-007
R408191-04	Duplicate (R408191-01) (QC ID=48871)	2.6	0.408	100	120	39	09/17/04	09/18	LSC-007

Nominal values and limits from method 400 0.371 25 180

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES \pm 2 SD MDA 2.9 \pm 0.52
FOR 4 SAMPLES YIELD 100 \pm 0

METHOD SUMMARIES

Page 6

SUMMARY DATA SECTION

Page 20

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/27/04

0000023

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2679

Test NI L Matrix SOLID
SDG 7073
Contact Melissa C. Mannion

LAB METHOD SUMMARY
NICKEL 63 IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2679

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7095-137

R408191-01	7073-001	B191J1	U
R408191-02	7073-002	LCS (QC ID=48869)	ok
R408191-03	7073-003	BLK (QC ID=48870)	U
R408191-04	7073-004	Duplicate (R408191-01)	- U

Nominal values and limits from method RDLs (pCi/g) 30
200-LW-1/LW-2 Characterization-Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED YZED DETECTOR

Preparation batch 7095-137 2σ prep error 10.0 % Reference Lab Notebook 7095 pg. 137

R408191-01	B191J1	2.5	0.500	82	100	40	09/17/04	09/19	LSC-007
R408191-02	LCS (QC ID=48869)	2.3	0.500	89	100	09/17/04	09/19	LSC-007	
R408191-03	BLK (QC ID=48870)	2.2	0.500	91	100	09/17/04	09/19	LSC-007	
R408191-04	Duplicate (R408191-01) (QC ID=48871)	2.5	0.500	81	100	40	09/17/04	09/19	LSC-007

Nominal values and limits from method 30 0.500 30-105 25 180

PROCEDURES	REFERENCE	NI63_LSC
CP-061	Determination of Moisture Content in Solid Samples rev 3	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5	
CP-280	Nickel-63 Purification, rev 3	

AVERAGES ± 2 SD	MDA	2.4	±	0.30
FOR 4 SAMPLES	YIELD	86	±	10

METHOD SUMMARIES

Page 7

SUMMARY DATA SECTION

Page 21

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	10/27/04

0000024

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2679

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 22

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000025

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2679

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 23

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000026

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2679

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

Page 24

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000027

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2679

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

Page 4

SUMMARY DATA SECTION

Page 25

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000028

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2679

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

REPORT GUIDES

Page 5

SUMMARY DATA SECTION

Page 26

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000029

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073

Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford

Contract No. 630

Case no SDG_H2679

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

Page 6

SUMMARY DATA SECTION

Page 27

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 10/27/04

0000030

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2679

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

REPORT GUIDES

Page 7

SUMMARY DATA SECTION

Page 28

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000031

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2679

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

REPORT GUIDES

Page 8

SUMMARY DATA SECTION

Page 29

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000032

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2679

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

REPORT GUIDES

Page 9

SUMMARY DATA SECTION

Page 30

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000033

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2679

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

Page 10

SUMMARY DATA SECTION

Page 31

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000034

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2679

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 32

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000035

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2679

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

REPORT GUIDES

Page 12

SUMMARY DATA SECTION

Page 33

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000036

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2679

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

Page 13

SUMMARY DATA SECTION

Page 34

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000037

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. 630
Case no SDG H2679

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

REPORT GUIDES

Page 14

SUMMARY DATA SECTION

Page 35

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000038

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2679

SDG 7073
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2679

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

Page 15

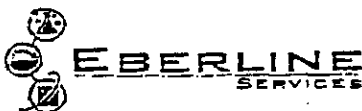
SUMMARY DATA SECTION

Page 36

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/27/04

0000039

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-025-113	PAGE 1	OF 1
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT TRENT, STEVE		TELEPHONE NO. 373-5689		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION 216-S-20; 12.5ft-15ft		PROJECT DESIGNATION 200-LW-1/LW-2 Characterization - Soil H2679 (7073)				SAF NO. F03-025		AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. GPP-03-010		FIELD LOGBOOK NO. HNF-N-356 1		COA 119143ES10		METHOD OF SHIPMENT Federal Express				
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. See PTR 13975				BILL OF LADING/AIR BILL NO. See PTR 13975				
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS N/A		PRESERVATION Cool 4C None							
			TYPE OF CONTAINER aG aG							
			NO. OF CONTAINER(S) 1 1							
			VOLUME 250mL 250mL							
			SPECIAL HANDLING AND/OR STORAGE N/A		SEE ITEM (1) IN SPECIAL INSTRUCTIONS SEE ITEM (2) IN SPECIAL INSTRUCTIONS					
SAMPLE NO.		MATRIX*		SAMPLE DATE	SAMPLE TIME					
B191J1	SOIL		8-10-04	1245	X					
CHAIN OF POSSESSION		SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS				
RELINQUISHED BY/ REMOVED FROM D. Wiberg		DATE/TIME 8/18/04		RECEIVED BY/ STORED IN M.O. LLC		DATE/TIME 8/19/04				
RELINQUISHED BY/ REMOVED FROM Site Fence #1		DATE/TIME 8/19/04 0830		RECEIVED BY/ STORED IN Greg Thomas		DATE/TIME 8/19/04 0830				
RELINQUISHED BY/ REMOVED FROM Greg Thomas		DATE/TIME 8/19/04 0830		RECEIVED BY/ STORED IN FED EX		DATE/TIME 8/23/04 8:00				
RELINQUISHED BY/ REMOVED FROM FED EX		DATE/TIME 8/21/04		RECEIVED BY/ STORED IN		DATE/TIME				
RELINQUISHED BY/ REMOVED FROM		DATE/TIME		RECEIVED BY/ STORED IN		DATE/TIME				
RELINQUISHED BY/ REMOVED FROM		DATE/TIME		RECEIVED BY/ STORED IN		DATE/TIME				
LABORATORY SECTION		RECEIVED BY				TITLE				
FINAL SAMPLE DISPOSITION		DISPOSAL METHOD				DISPOSED BY				
						DATE/TIME				



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Saturday Delivery

Client: Fluor Hanford City Richland State WADate/Time received 8/27/04 CoC No. FO3-025-113Container I.D. No. GPO 03-010 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [X] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [X] No [] N/A []
3. Custody seals on sample containers intact? Yes [X] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [X] No [] N/A []
5. Packing material is: Wet [] Dry [X]
6. Number of samples in shipping container: 1 Sample Matrix Soil
7. Number of containers per sample: 1 (Or see CoC)
8. Samples are in correct container Yes [X] No []
9. Paperwork agrees with samples? Yes [X] No []
10. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [] Broken Container [] Missing []
12. Samples are: Preserved [] Not preserved [] pH Preservative
13. Describe any anomalies:
14. Was P.M. notified of any anomalies? Yes [] No [] Date
15. Inspected by [Signature] Date: 8/23/04 Time: 8:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. Calibration date Alpha Meter Ser. No. Calibration date Beta/Gamma Meter Ser. No. Calibration date



24 October 2004

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352

**Subject: Contract No. 630
Analytical Data Package**

Dear Mr. Trent:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0408L420
SDG #	H2679
SAF #	F03-025
Date Received	8-21-04
# Samples	3
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
Herbicides	
GC Alcohol	
Metals	
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated


Orlette S. Johnson
Project Manager



0000042

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2679

DATE RECEIVED: 08/21/04

LVL LOT # :0408L420

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B191J1						
% SOLIDS	001	S	04L&S147	08/10/04	08/24/04	08/24/04
% SOLIDS	001 REP	S	04L&S147	08/10/04	08/24/04	08/24/04
CHROMIUM VI	001	S	04LVI028	08/10/04	09/14/04	09/14/04
CHROMIUM VI	001 REP	S	04LVI028	08/10/04	09/14/04	09/14/04
CHROMIUM VI	001 MS	S	04LVI028	08/10/04	09/14/04	09/14/04
CHROMIUM VI	001 MSD	S	04LVI028	08/10/04	09/14/04	09/14/04
NITRATE NITRITE	001	S	04LN3053	08/10/04	09/17/04	09/17/04
NITRATE NITRITE	001 REP	S	04LN3053	08/10/04	09/17/04	09/17/04
NITRATE NITRITE	001 MS	S	04LN3053	08/10/04	09/17/04	09/17/04
OIL & GREASE BY GRAV	001	S	04LOG024	08/10/04	09/03/04	09/04/04
OIL AND GREASE BY GR	001 REP	S	04LOG024	08/10/04	09/03/04	09/04/04
OIL AND GREASE BY GR	001 MS	S	04LOG024	08/10/04	09/03/04	09/04/04
SULFIDE	001	S	04LSD045	08/10/04	08/25/04	08/25/04
SULFIDE	001 REP	S	04LSD045	08/10/04	08/25/04	08/25/04
SULFIDE	001 MS	S	04LSD045	08/10/04	08/25/04	08/25/04

LAB QC:

CHROMIUM VI	MB1	S	04LVI028	N/A	09/14/04	09/14/04
CHROMIUM VI	MB1 BS	S	04LVI028	N/A	09/14/04	09/14/04
CHROMIUM VI	MB1 BSD	S	04LVI028	N/A	09/14/04	09/14/04
NITRATE NITRITE	MB1	S	04LN3053	N/A	09/17/04	09/17/04
NITRATE NITRITE	MB1 BS	S	04LN3053	N/A	09/17/04	09/17/04
OIL & GREASE BY GRAV	MB1	S	04LOG024	N/A	09/03/04	09/04/04
OIL AND GREASE BY GR	MB1 BS	S	04LOG024	N/A	09/03/04	09/04/04
OIL AND GREASE BY GR	MB1 BSD	S	04LOG024	N/A	09/03/04	09/04/04
SULFIDE	MB1	S	04LSD045	N/A	08/25/04	08/25/04
SULFIDE	MB1 BS	S	04LSD045	N/A	08/25/04	08/25/04
SULFIDE	MB1 BSD	S	04LSD045	N/A	08/25/04	08/25/04

0000043

01



Analytical Report

Client: TNU-HANFORD F03-025 H2679

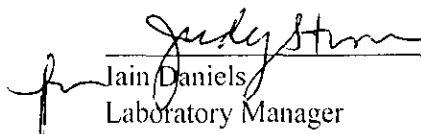
LVL#: 0408L420

W.O.#: 11343-606-001-9999-00

Date Received: 08-21-04

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from a sample that did not meet LvLI's sample acceptance policy as noted on the Sample Receipt Checklist.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Oil and Grease and Sulfide were within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for Chromium VI, Nitrate Nitrite, Oil and Grease and Sulfide were within the 75-125% control limits.
8. The replicate analyses for Percent Solids, Nitrate Nitrite, Oil and Grease and Sulfide were within the 20% RPD control limit however replicate analysis for Chromium VI was outside the control limit at 25%.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Jaim Daniels
Laboratory Manager
Lionville Laboratory Incorporated

njp108-420

9/30/04
Date

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

0000044

02

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	— D2216-80		
% Moisture	— D2216-80		— ILMO4.0 (e)
% Solids	✓ — D2216-80		— ILMO4.0 (e)
% Volatile Solids	— D2216-80		
ASTM Extraction in Water	— D3987-81/85		
BTU	— D240-87		
CEC		— 9081	— c
Chromium VI		✓ — 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		— 1110(mod) — 9045C	
Cyanide, Total		— 9010B	— ILMO4.0 (e)
Cyanide, Reactive		— Section 7.3/9014	
Halides, Extractable Organic		— 9020B	— EPA 600/4/84-008
Halides, Total		— 9020B	— EPA 600/4/84-008
EP Toxicity		— 1310A	
Flash Point		— 1010	
Ignitability		— 1010	
Oil & Grease		✓ — 9071A	✓ 413.1 (mod.)
Carbon, Total Organic		— 9060	— Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	— D240-87(mod)	— 5050	
Petroleum Hydrocarbons, Total Recoverable		— 9071	— EPA 418.1
pH, Soil		— 9045C	
Sulfide, Reactive		— Section 7.3/9030B	
Sulfide		✓ — 9030B(mod)/ 9034	
Specific Gravity	— D1429-76C/	— D5057-90	
Sulfur, Total		— 9056	
Synthetic Preparation Leach		— 1312	
Paint Filter		— 9095A	
Other: <i>Nitrate Nitrite</i>		Method: <i>EPA 353.2 (mod.)</i>	
Other:		Method	

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/17/04

CLIENT: TNUHANFORD F03-025 H2679
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0408L420

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	B191J1	% Solids	93.3	%	0.01	1.0
		Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	2.8	MG/KG	0.43	2.0
		Oil & Grease Gravimetri	714	u MG/KG	714	1.0
		Sulfide	26.0	u MG/KG	26.0	1.0

0000047

05

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/17/04

CLIENT: TNUHANFORD F03-025 H2679
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0408L420

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LVI028-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0
BLANK10	04LN3053-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	04LOG024-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0
BLANK10	04LSD045-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

0000048

06

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/17/04

CLIENT: TNUHANFORD F03-025 H2679
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0408L420

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-001	B191J1	Soluble Chromium VI	4.7	0.21u	4.3	107.1	1.0
		Insoluble Chromium VI	1450	0.21u	1330	108.6	100
		Nitrate Nitrite	34.5	2.8	26.8	118.5	5.0
		Oil & Grease Gravimetr	5460	714 u	7210	75.7	1.0
		Sulfide	227	13.0	263	81.4	1.0
BLANK10	04LVI028-MB1	Soluble Chromium VI	4.0	0.20u	4.0	100	1.0
		Insoluble Chromium VI	1170	0.20u	1180	99.0	100
BLANK10	04LN3053-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.2	1.0
BLANK10	04LOG024-MB1	Oil & Grease Gravimetr	6000	667 u	6840	87.7	1.0
		Oil & Grease - Grav M	5630	667 u	6730	83.6	1.0
BLANK10	04LSD045-MB1	Sulfide	337	40.0 u	394	85.4	1.0
		Sulfide MSD	349	40.0 u	394	88.4	1.0

0000049

07

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/17/04

CLIENT: TNUHANFORD F03-025 H2679
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0408L420

SAMPLE	SITE ID	ANALYTE	SPIKE#1 SPIKE#2		
			%RECOV	%RECOV	%DIFF
BLANK10	04LOG024-MB1	Oil & Grease - Grav	87.7	83.6	4.8
BLANK10	04LSD045-MB1	Sulfide	85.4	88.4	3.5

0000050

08

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/17/04

CLIENT: TNUHANFORD F03-025 H2679
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0408L420

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B191J1	% Solids	93.3	93.0	0.40	1.0
		Chromium VI	0.21u	0.27	25.0	1.0
		Nitrate Nitrite	2.8	2.5	13.0	1.0
		Oil & Grease Gravimetri	714 u	714 u	NC	1.0
		Sulfide	26.0 u	30.0 u	NC	1.0

0000051

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS[illegible]

Special Instructions:

DATE/REVISIONS:

Lionville Laboratory Use Only

Samples were:

1) Shipped _____ or
Hand Delivered _____
Airbill # _____

2) Ambient or Chilled _____

3) Received in Good
Condition Y or N

4) Samples
Properly Preserved
Y or N

5) Received Within
Holding Times
Y or N

Tamper Resistant Seal was:

1) Present on Outer
Package Y or N

2) Unbroken on Outer
Package Y or N

3) Present on Sample
Y or N

4) Unbroken on
Sample Y or N

COC Record Present
Upon Sample Rec't
Y or N

Cooler
Temp. _____ °C

Relinquished by <i>WDE</i>	Received by <i>W. H. H. H. H.</i>	Date <i>5/1/04</i>	Time <i>1005</i>
"COMPOSITE WASTE"	ORIGINAL REWRITTEN		

Discrepancies Between
Samples Labels and
COC Record? Y or N
NOTES:

[illegible]

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU Hartford*

Date: *8/21/04*

Purchase Order / Project# /

SAF# / SOW# / Release #: *F03-025*

LvLI Batch #:

04086420

Sample Custodian:

Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|--|---|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <i>FEDEX</i> | Airbill# <i>79073795 0621</i> |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or ambient? | Temp <i>16.9 °C</i> | Cooler # <i>SAWS-104</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <i>MSA-2904</i> <input checked="" type="checkbox"/> No | <i>Sulfide past hold</i> |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <i>MSA-2904</i> <input checked="" type="checkbox"/> No | <i>See #5 (above 0-6°C range)</i>
<i>#12</i> |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Discrepancies |